Hansen's disease in Northeast Brazil

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Background: Hansen's disease is an infectious malady with an insidious evolution caused by *Mycobacterium leprae*. This bacteria is transmitted through contact with damaged skin/mucosa or oropharyngeal/nasal secretions of infected patients. Peripheral nerves can be affected by this disease too, which can be incapacitating if left untreated. In spite of the Brazilian government efforts to contain the dissemination of Hanseniasis, it is still an important public health problem, mainly in the poorer areas of the country, including the Northeast region. Knowing the disease epidemiology, making early diagnosis and initiating adequate treatment and follow up are indispensable tools to achieve its control. In order to understand the epidemiology of Hansen's disease in our city, we conducted the present study.

Methods: This is a retrospective cohort study of all the patients with Hansen's disease diagnosed and treated in the Dona Libânia Dermatology Reference Center, in Fortaleza, Ceará, Northeast Brazil, in 2008. Patients' medical records were reviewed and the data collected was analyzed utilizing the Epi Info 3.5 program.

Results: A total of 273 patients were included in the study and 52% were female. Most prevalent age intervals were 41-60yrs (39,19%) and 20-40yrs (35,16%). Hypochromic or eritematous patches, presence of skin nodules or plaques, neuropathic pain and functional sequelae were the most frequent signs/symptoms found on admission, with prevalence of 81,7%, 59,6%, 23,1% and 13,3% respectively. In 27,8% patients the disease could not be classified. The remaining was classified as follow: 37% borderline, 20,5% tuberculoid, 11,4% lepromatous and 3,3% indeterminate. Only in 16,5% of the patients a household contact was identified as a reservoir of the bacteria.

Conclusion: Hansen's disease is still a prevalent disease in our city. Most of the patients were adults, in productive working ages. Some of them presented with functional incapacity or advanced neural damage on admission suggesting an unacceptable delay in the diagnosis. Our findings point to the necessity of a better identification of risk factors, investigation of reservoirs and the use of more sensitive methods for early detection of leprosy in order to achieve adequate control of the disease.

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31.004

Identification of immunogenic proteins of *Mycobacterium avium* with diagnostic potential

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Background: Non-tuberculous mycobacteria (NTM) is the term used to define all the remaining species from *Mycobacterium tuberculosis* complex species (MTC). The major ness. Members of the*Mycobacterium avium* complex (MAC) may be found in drinking water systems and is now more frequently isolated than MTC and represents the 26% of the total mycobacterial isolates from chronic pulmonary disease of NTM. Since the ubiquitous occurrence of MAC organisms in the environment, and the clinical presentation may be indistinguishable from tuberculosis, the diagnosis of pathogenic agent is important to apply the correct antibacterial treatment. In order to find a diagnostic tool to distinguish between MAC from MTC, we have use an immunoproteomic approach to find immunogenic proteins from *M. avium* and *Mycobacterium bovis* BCG strain México to represent MAC and MTC respectively.

Methods: With a panel of 52 serum samples classified into four groups: patients with active pulmonary tuberculosis, patients with chronic pulmonary by NTM, subjects with positive reaction to protein derivative (PPD) who were healthy household contacts and those with negative reaction who were the healthy uninfected controls, ELISA test was performed for titration of IgG2 against 16 mycobacterial strains from three groups: *M. tuberculosis*, *M. bovis* BCG and NTM. The sera with higher titers were used to obtain the immunoproteomes. A standard proteomic analysis of BCG Mexico and *M avium* M7 began with the separation and visualization of the protein mixture using two-dimensional polyacrylamide gel electrophoresis (2-DE) followed by Western blotting for the screening of immunogenic proteins using selected sera.

Results: The comparison between the immunodetection of different sera: TB, MNT and PPD+/− against BCG Mexico gave about 80% of unique proteins and 20% of proteins shared among different sera. The immunodetection in *M. avium*gave 90% of unique proteins and 10% of proteins shared among the same sera.

Conclusion: The comparative analysis between immunoproteomes of BCG Mexico and *M. avium* allowed the identification of candidate proteins for the differentiation between pulmonary disease caused by NTM and BCG Mexico as a member of MTC.

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Characterization of nontuberculous mycobacteria isolated of potable water distribution system and wastewater of Mexico City Metropolitan Area

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Background: Background: Nontuberculous mycobacteria (NTM) are normal inhabitants of the environment and they are found in soil, dust and water including natural and potable water and since there is no evidence of person-to-person transmission, the water is considered the main vehicle for transmission of nontuberculous mycobacteria. Some studies have shown that the rate of infection by nontuberculous mycobacteria is increasing in predisposing hosts as well as healthy persons. On the other hand NTM may alter replication of vaccine *Mycobacterium bovis* Bacillus

Calmette and Guerin in animal model and influence in the protection subsequent BCG vaccination. The aim of this study was the isolation and identification of nontuberculous mycobacteria in: drinking water distribution systems in the Mexico City Metropolitan zone.*Methods:* Water samples were decontaminated by NaOH/SDS and cultured onto Lowenstein Jensen to 37 °C/ 30 days. Different colonies were identified by PCR-PRA 65 kDa gen, sequencing and phylogenetic inference.

Results: We isolated NTM in both water sources. The most frequently occurring isolates in potable water supply system were *M. nonchromogenicum, M. arupense, M. peregrinum* and *M. gordonae*. Eleven species were isolated in wastewater and one *Mycobacterium* spp.

Conclusion: It is important to know the geographic distribution of nontuberculous mycobacteria presence in drinking and wastewater because represent a risk for the population health.

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32.001

Mass screening for fever: A comparison of three infrared thermal dectection systems and selfreported fever

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Background: During the 2003 severe acute respiratory syndrome and 2009 pandemic influenza A (H1N1) outbreaks, infrared thermal detection systems (ITDS) were used at international ports of entry and in hospitals to screen for fever. However, evidence is limited to support the accuracy of ITDS and their benefit over self-reported fever for mass screening. In this study, we compared three different ITDS to self-reported fever.*Methods:* A cross-sectional study of 2986 patients (age≥18 years) was conducted in three hospital emergency departments. Patients were asked if they felt that they had a fever (selfreported fever). We measured patient skin temperatures by using three ITDS (FLIR A20 M, OptoTherm Thermoscreen, Wahl HSI2000S) and oral temperatures (≥100oF = confirmed fever) by using digital thermometers. ITDS temperature measurements and self-reported fevers were compared using oral temperatures as a reference. Data were analyzed using simple and multiple linear methods.

Results: Of 2873 patients with an oral temperature recorded, 64 (2.2%) had a confirmed fever. Fever was reported by 476 (16.6%) patients and 48 (10.1%) of these were confirmed. Self-reported fever had 75.0% sensitivity and 84.7% specificity. At optimal cutoffs for detecting fever as found in this study, the OptoTherm Thermoscreen and FLIR A20 M temperature measurements had greater sensitivity (85.7% and 79.0%) and specificity (91.0% and 92.0%) than self-reported fever. Of the three methods evaluated (ITDS, self report, and a combination in which a signal on either ITDS or self report indicated a fever), ITDS (OptoTherm Thermoscreen and FLIR A20 M) had the highest total sensitivity and specificity for fever detection. Correlations between ITDS measurements and oral temperatures were similar for the OptoTherm Thermoscreen (r = 0.43) and FLIR A20 M (r = 0.42), and significantly lower for Wahl HSI2000S (r = 0.14, p)0.001 for both comparisons).

Conclusion: When compared with oral temperatures, two ITDS (FLIR A20 M and OptoTherm Thermoscreen) were reasonably accurate in detecting fever and were better predictors of fever than self report. These findings may be particularly important in the context of travel in which fever may not be reported or cannot be measured using contact thermometers. In such settings, ITDS could provide an objective means for detecting fever as part of a comprehensive public health screening strategy.

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32.002

Characteristics of travelers to developing countries: Findings from the 2008 consumer styles survey

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Background: Developing countries, while gaining in popularity as travel destinations, may present increased or unfamiliar health risks to travelers from developed countries and require important pre-travel preparation such as seeking medical advice, medications, and vaccinations. Studying the characteristics of travelers to developing countries can help formulate more effective messages for healthy travel.

Methods: We analyzed survey data from Porter Novelli ConsumerStyles 2008, a mail survey with a U.S. representative sample, to understand characteristics of overnight stay travelers to developing countries (countries except the United States, Canada, Europe, Japan, Australia, and New Zealand). Odds rations (OR) and logistic regression were used in the analysis (all p-values < 0.05).

Results: Among the 10,108 survey respondents, 913 (9%) were travelers. Only 331 (36%) travelers sought pre-travel medical advice from one of the 11 sources listed, 157 (47%) of those 331 sought advice from multiple sources. The top reasons for not getting pre-travel medical advice were the belief that pills/shots were not needed (35%), followed by not thinking about it (27%). A specific question for travelers who visited yellow fever endemic countries (Kenya, Nigeria, Ghana or Senegal) revealed that only 52% (38/73) got yellow fever vaccine. Compared to non-travelers, travelers were more likely to be male (OR = 1.24, 95% confidence interval (CI): 1.08-1.42), Hispanic (OR = 1.38, CI: 1.15-1.67), over age 55 years (OR = 1.26, CI: 1.09-1.45), living in smaller households (<4 members, OR = 1.29, CI: 1.12-1.5), from richer families (>$60k, OR = 2.94, CI: 2.54-3.4), and nonwhite (OR = 1.19, CI: 1.03-1.37). They were more adventurous (OR = 1.34, CI: 1.17-1.54), and in better health (OR = 1.82,